

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claim 1 (Currently Amended): A method for dynamically initializing a view for a streaming database system, comprising:

accessing, by a computing device, at least one stream of events in real time while said at least one stream of events is received by said computing device as output from a streaming database system, wherein said computing device is external to said streaming database system;

materializing, by said computing device-external to said streaming database system and as said at least one stream of events is received from said streaming database, an initialized view from said at least one stream of events as said at least one stream of events is received from said streaming database system, wherein said initialized view is dynamically defined from said at least one stream of events-received from said streaming database system, and wherein materializing said initialized view comprises receiving a first dynamic view definition and generating said initialized view according to said first dynamic view definition;

producing, by said computing device-external to said streaming database system, a sequence of view snapshots from said materialized-initialized view, wherein each view snapshot in said sequence corresponds to an individual event within said at least one stream of events, wherein each individual event occurs after events of said at least one stream of events are used to materialize said initialized view;

storing said sequence of view snapshots; and

receiving a second dynamic view definition, said second dynamic view definition being different than said first dynamic view definition; and

using said sequence of view snapshots to generate, by said computing device external to said streaming database system, [[an]] a re-initialized view according to said second dynamic view definition, wherein generating said re-initialized view comprises incorporating events used to materialize said initialized view and events of said sequence of view snapshots that incorporates new events of said stream, and wherein generating said re-initialized view

comprises calculating a view state of said re-initialized view by retrieving and replaying said sequence of view snapshots.

Claim 2 (Original): The method as recited in Claim 1 wherein said initialized view comprises a plurality of row data structures.

Claim 3 (Currently Amended): The method as recited in Claim 1, wherein said initialized view comprises[[is]] a stateful view resulting from a stateful stream, said stateful view having a bounded number of rows.

Claim 4 (Previously Presented): The method of Claim 3, wherein each view snapshot of said stateful view comprise a state of said stateful view including events existent at said materializing of said stateful view and events accessed after said materializing of said stateful view at a particular time.

Claim 5 (Currently Amended): The method of Claim 1[[2]], wherein said initialized view comprises[[is]] a stateless view resulting from a stateless stream, said stateless view having an unbounded number of rows.

Claim 6 (Currently Amended): The method of Claim 5, wherein each view snapshot of said stateless view comprises a state of said stateless view including events existent at said materializing of said stateless view, including a last event processed during said materializing of said stateless view.

Claim 7 (Previously Presented): The method of Claim 1, further comprising:
processing said sequence of view snapshots by maintaining a sequence of a plurality of preceding current view snapshots.

Claim 8 (Previously Presented): The method of Claim 7, further comprising:
applying a batch set of events to said processing of said sequence of view snapshots, wherein each event of said batch set has a corresponding view snapshot in said sequence.

Claim 9 (Original): The method of Claim 1, wherein said generating of said initialized view is configured to accomplish a recovery of a view state.

Claim 10 (Original): The method of Claim 1, wherein said generating of said initialized view is configured to accomplish a re-enabling of a view after a disabling of a view.

Claim 11 (Original): The method of Claim 1, wherein said generating of said initialized view is configured to accomplish a load balancing of a view maintenance process.

Claims 12–35 (Cancelled).

Claim 36 (New): The method of claim 1, wherein accessing at least one stream of events comprises:

issuing, by said computing device, a stream query to said streaming database system; and receiving, by said computing device, each of said events of said at least one stream of events as a result of said stream query without reissuing said stream query to said streaming database system.

Claim 37 (New): A method comprising:

receiving, by a computing device external to a streaming database system, a first dynamic view definition;

receiving, by said computing device, a first set of events of a stream from said streaming database system;

materializing, by said computing device, an initialized view for a view according to said first dynamic view definition using said first set of events;

receiving, by said computing device, a second set of events of said stream from said streaming database system;

updating, by said computing device, said view according to said first dynamic view definition using said second set of events;

publishing, by said computing device, said second set of events as a first set of view snapshots according to said first dynamic view definition;

receiving, by said computing device, a second dynamic view definition, said second dynamic view definition being different from said first dynamic view definition;

materializing, by said computing device, a re-initialized view of said stream of events according to said second dynamic view definition by retrieving and replaying at least one of said first set of view snapshots; and

publishing, by said computing device, said second set of events as a second set of view snapshots according to said second dynamic view definition.

Claim 38 (New): A system comprising:

a streaming database system that outputs at least one stream of events;
a computing device, external to said streaming database system, comprising a view engine configured to access said at least one stream of events in real time while said at least one stream of events is received as output from said streaming database system, to materialize an initialized view from said at least one stream of events, wherein said initialized view is dynamically defined from said at least one stream of events, said view engine further configured to receive a first dynamic view definition and generate said initialized view according to said first dynamic view definition, to produce a sequence of view snapshots from said initialized view, wherein each view snapshot in said sequence corresponds to an individual event within said at least one stream of events, wherein each individual event occurs after events of said at least one stream of events are used to materialize said initialized view, store said sequence of view snapshots, receive a second dynamic view definition, said second dynamic view definition being different than said first dynamic view definition, and use said sequence of view snapshots to generate a re-initialized view of a second view according to said second dynamic view definition, wherein said view engine is configured to incorporate said events used to materialize said initialized view and events of said view snapshots and to calculate a view state of said re-initialized view by retrieving and replaying said sequence of view snapshots in order to generate said re-initialized view,

wherein said streaming database system is configured to send said at least one stream of events to said computing device.

Claim 39 (New): The system of claim 38, wherein said computing device issues a stream query to said streaming database system, and wherein said streaming database system sends events of said at least one stream of events to said computing device as a result of said stream query without said computing device reissuing said stream query to said streaming database system.

Claim 40 (New): The system of claim 38, wherein said initialized view comprises a stateful view resulting from a stateful stream, said stateful view having a bounded number of rows.

Claim 41 (New): The system of claim 40, wherein each recent view snapshot of said stateful view comprises a state of said initialized view including events existent at said materializing of said initialized view and events accessed after said materializing of said initialized view at a particular time.

Claim 42 (New): The system of claim 38, wherein said initialized view comprises a stateless view resulting from a stateless stream, said stateless view having an unbounded number of rows.

Claim 43 (New): The system of claim 42, wherein each recent view snapshot of said stateless view comprises a state of said initialized view including events existent at said materializing of said initialized view, including a last event processed during said materializing of said initialized view.

Claim 44 (New): The system of claim 38, wherein said view engine is further configured to process said sequence of recent view snapshots by maintaining a sequence of a plurality of preceding current view snapshots.

Claim 45 (New): The system of claim 44, wherein said view engine is further configured for applying a batch set of events to said processing of said sequence of recent view snapshots, wherein said event of said batch set has a corresponding recent view snapshot in said sequence.

Claim 46 (New): A computer-readable medium comprising instructions for causing a programmable processor of a computing device external to a streaming database to:

access at least one stream of events in real time while said at least one stream of events is received by said computing device as output from a streaming database system, wherein said computing device is external to said streaming database system;

materialize an initialized view from said at least one stream of events as said at least one stream of events is received from said streaming database system, wherein said initialized view is dynamically defined from said at least one stream of events, and wherein said instructions to materialize said initialized view comprise instructions to receive a first dynamic view definition and generate said initialized view according to said first dynamic view definition;

produce a sequence of view snapshots from said initialized view, wherein each view snapshot in said sequence corresponds to an individual event within said at least one stream of events, wherein each individual event occurs after events of said at least one stream of events are used to materialize said initialized view;

store said sequence of view snapshots;

receive a second dynamic view definition, said second dynamic view definition being different than said first dynamic view definition; and

use said sequence of view snapshots to generate a re-initialized view according to said second dynamic view definition, wherein said instructions to generate said re-initialized view comprise instructions to incorporate events used to materialize said initialized view and events of said sequence of view snapshots, and wherein said instructions to generate said re-initialized view comprise instructions to calculate a view state of said re-initialized view by retrieving and replaying said sequence of view snapshots.

Claim 47 (New): The computer-readable medium of claim 46, wherein said initialized view comprises a stateful view resulting from a stateful stream, said stateful view having a bounded number of rows.

Claim 48 (New): The computer-readable medium of claim 47, wherein each view snapshot of said stateful view comprises a state of said stateful view including events existent at said materializing of said stateful view and events accessed after said materializing of said stateful view at a particular time.

Claim 49 (New): The computer-readable medium of claim 46, wherein said view comprises a stateless view resulting from a stateless stream, said stateless view having an unbounded number of rows.

Claim 50 (New): The computer-readable medium of claim 49, wherein each view snapshot of said stateless view comprises a state of said stateless view including events existent at said materializing of said stateless view, including a last event processed during said materializing of said stateless view.

Claim 51 (New): The computer-readable medium of claim 46, further comprising instructions for causing said programmable processor of said computing device to process said sequence of view snapshots by maintaining a sequence of a plurality of preceding current view snapshots.

Claim 52 (New): The computer-readable medium of claim 51, further comprising instructions for causing said programmable processor of said computing device to apply a batch set of events to said processing of said sequence of view snapshots, wherein each event of said batch set has a corresponding view snapshot in said sequence.

Claim 53 (New): A computer-readable medium comprising instructions for causing a programmable processor of a computing device external to a streaming database system to:

- receive a first dynamic view definition;
- receive a first set of events of a stream from said streaming database system;
- materialize an initialized view for a view according to said first dynamic view definition using said first set of events;
- receive a second set of events of said stream from said streaming database system;
- update said view according to said first dynamic view definition using said second set of events;
- publish said second set of events as a first set of view snapshots according to said first dynamic view definition;
- receive a second dynamic view definition, said second dynamic view definition being different from said first dynamic view definition;
- materialize a re-initialized view of said stream according to said second dynamic view definition by retrieving and replaying at least one of said first set of view snapshots; and
- publish said second set of events as a second set of view snapshots according to said second dynamic view definition.